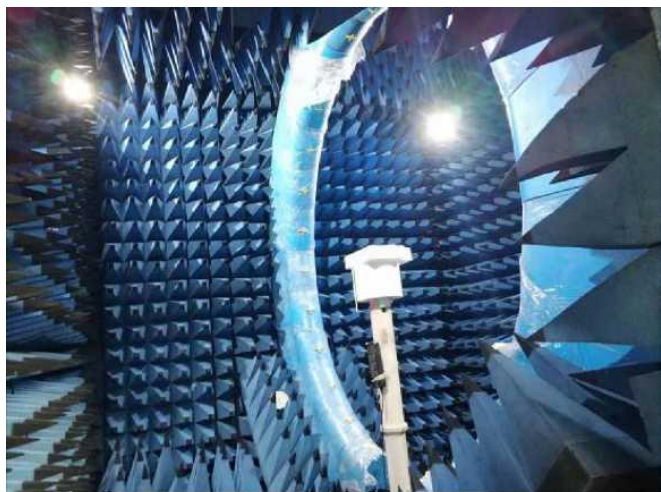


Onboard monopole antenna test report during 2.4G-2.48G

SPECIFICATIONS	
Frequency (MHz)	2400-2480
Average Gain (dBi)	>-10
VSWR	<2
Antenna model	RF02
Impedance (Ω)	50 Ω
Antenna Type	Plannar Inverted F Antenna on board
Polarization	Linear
Test Company name	Shenzhen Gener Electronic Co.Ltd
Test Address	305,Floor 3,Building Chengshi Shanhai Center,No,11,Zhongxin Road,Bantian Street,Longgang District,Shenzhen
Test Day	20251231
Test person	zhonghaibo
Company name	Shenzhen Futianfa Technology Co., Ltd.
Address	1F,Bbuilding,Xintaaside Science Park,Xitou Road,Songgang Street,Baoan District,Shenzhen

Test environment: General Test darkroom test system





SG24



GTS



Agilent 8960



CMW 500



Agilent E5071B

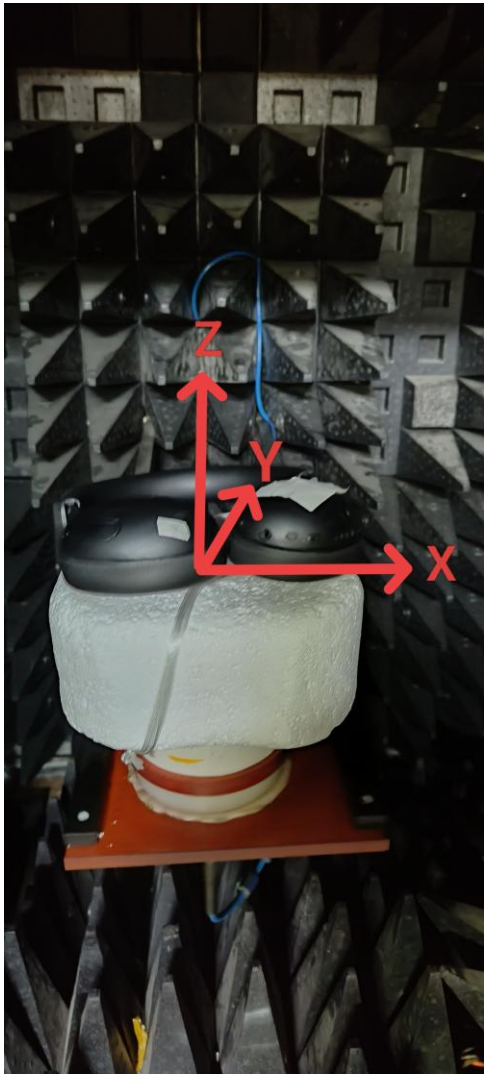
equipment	Manufacturer	Model NO.	Serial NO.	Last Cal	Due Date
Network Analyzer	Agilent	E5071C	xxx	2025. 08. 10	2026. 08. 10
CMW500	Rohde schwarz	CMW500		2025. 08. 10	2026. 08. 10
GTS	CScurve			2025. 08. 10	2026. 08. 10
Agilent 8960	Agilent			2025. 08. 10	2026. 08. 10

Test System	Testing Environment	Active Test	Passive Test
SG24 GTS	Temperature : $22^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Humidity : 50% $\pm 15\%$	Support 2G/3G/4G Support BT/WIFI/GPS	600MHZ——6G

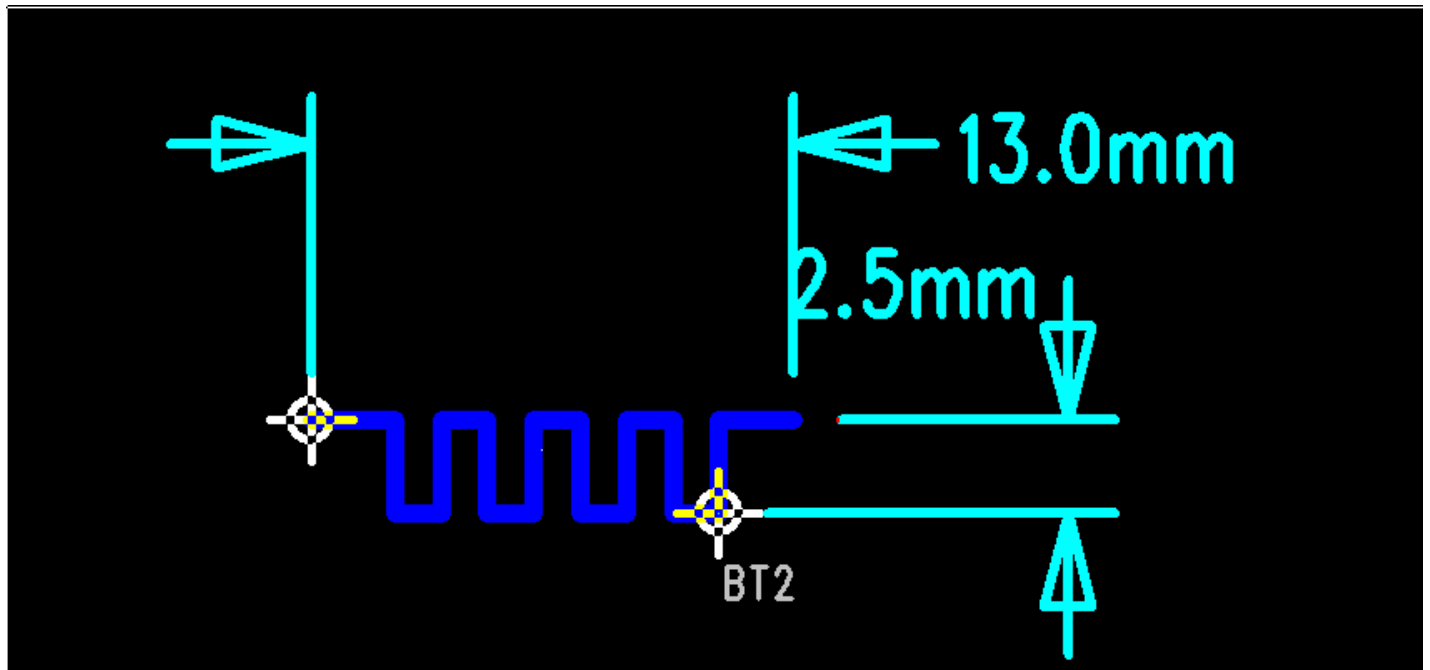
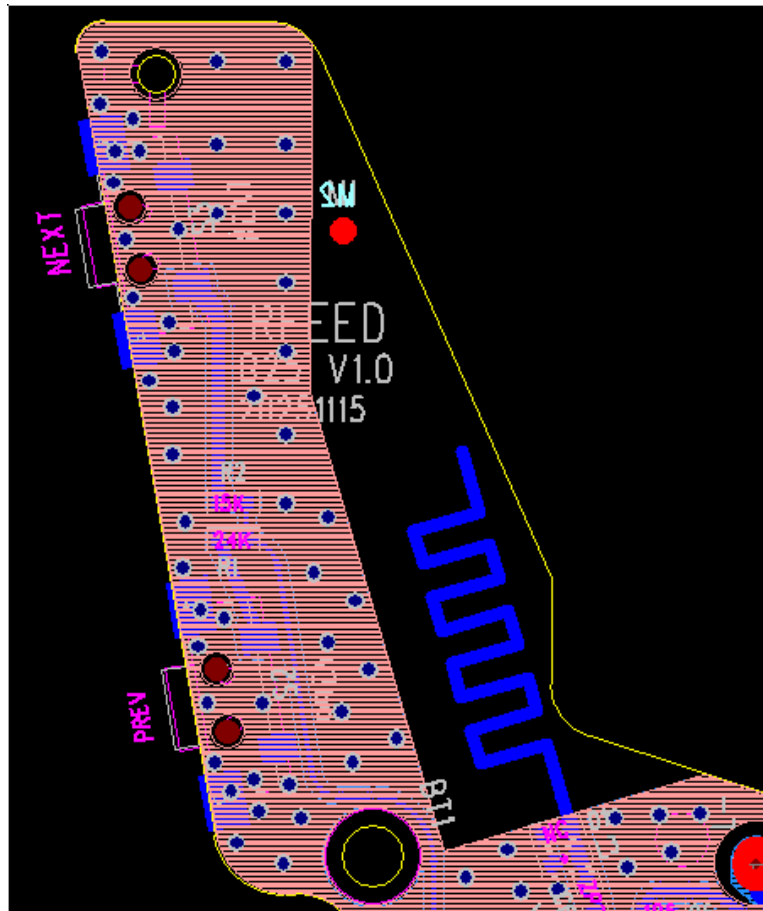
Test Standard

Name	Parameter	Method	Standard no.
Antenna performance	Radiation efficieney	IEEE Standard Test Procedures for Antennas	ANSI/IEEE Std149-2021

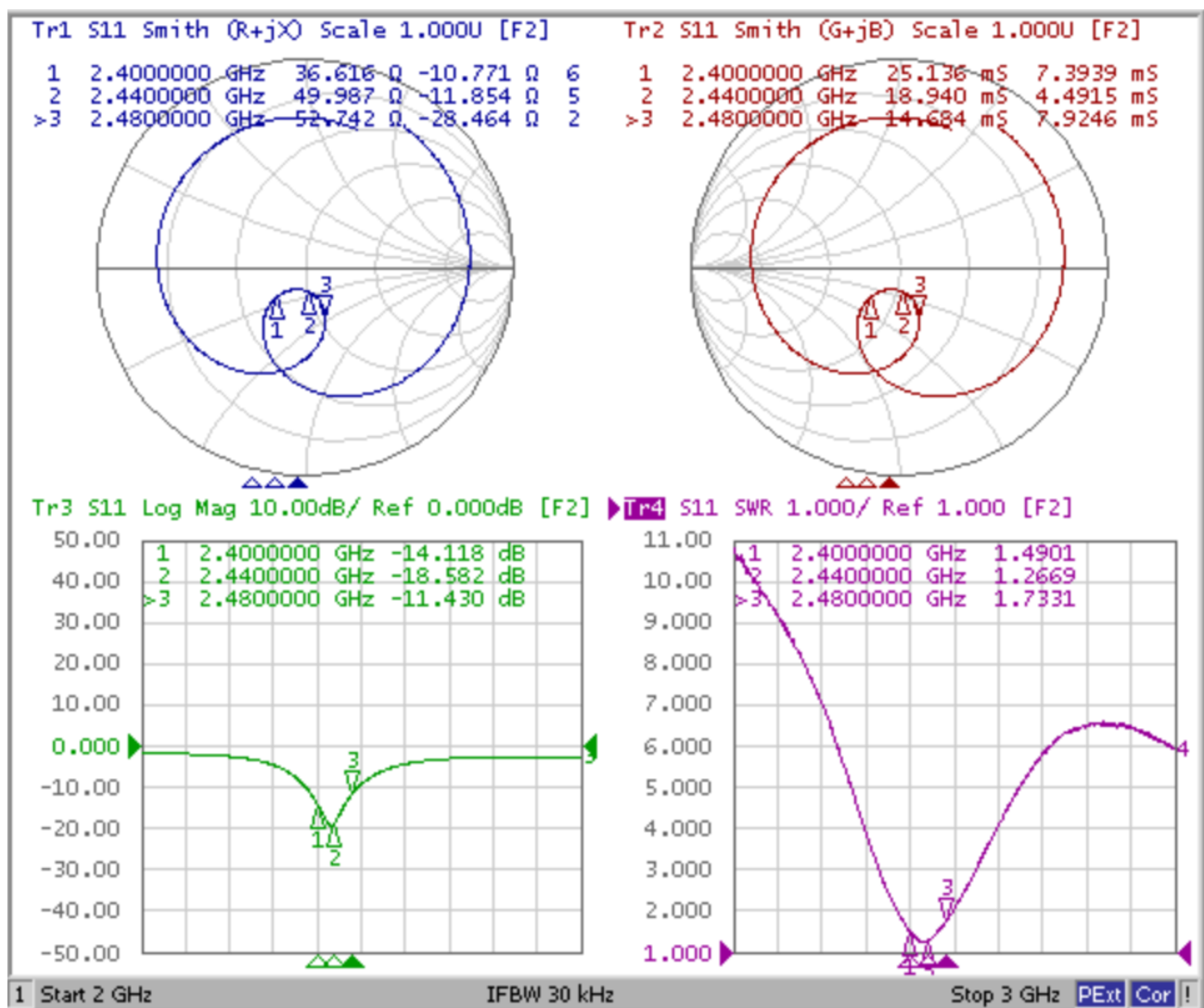
Test Set up photo



Antenna and its physical dimensions



Antenna Passive S-Parameters:VSWR,Return Loss,Smith Chart

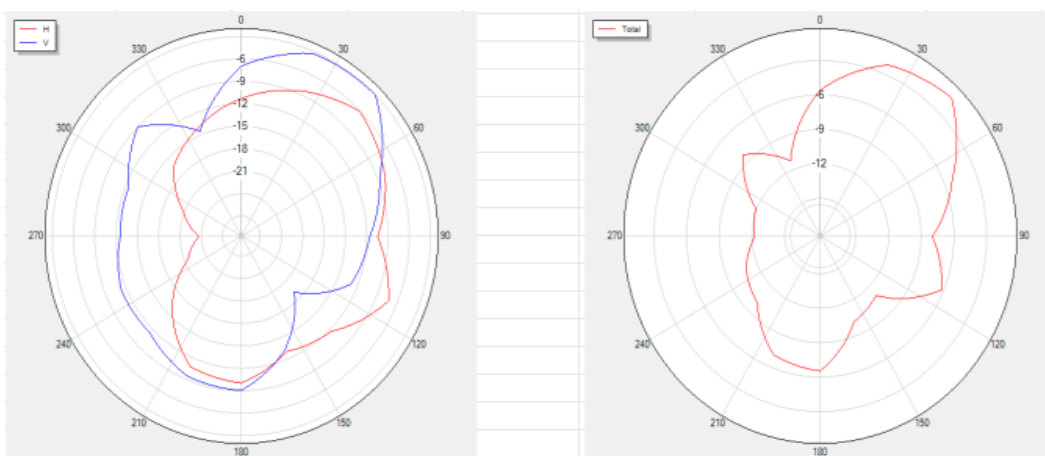


Fre. MHZ	2400 (MHz)	2440 (MHz)	2480 (MHz)
VS11	-14.11	-18.58	-11.43
SWR	1.49	1.26	1.73

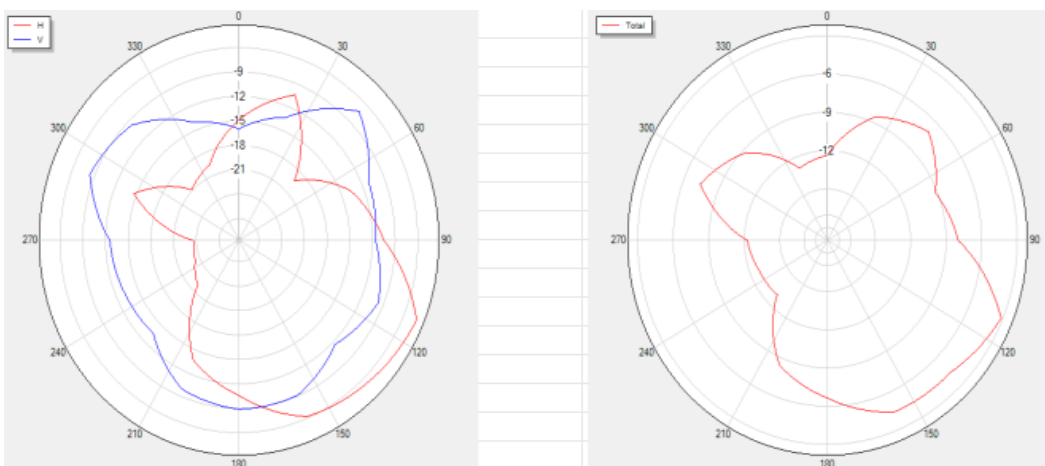
Antenna efficiency and gain

Frequency (MHz)	Efficiency (dBi)	Gain	Efficiency (%)
2400	-8.16	-0.51	15.28
2410	-7.47	0.18	17.89
2420	-7.13	0.5	19.35
2430	-7.18	0.61	19.12
2440	-6.64	1.35	21.65
2450	-6.51	1.41	22.35
2460	-5.81	2.29	26.26
2470	-5.76	2.31	26.54
2480	-5.16	2.67	30.51
2490	-4.85	3.16	32.71
2500	-4.71	3.23	33.8

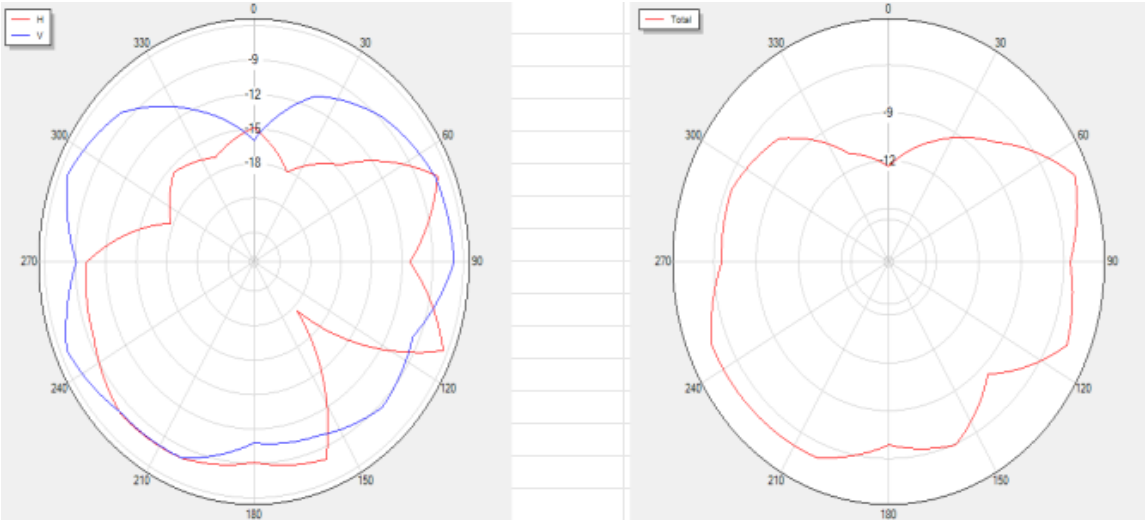
Antenna 2440MHz 2D-Theta Pattern



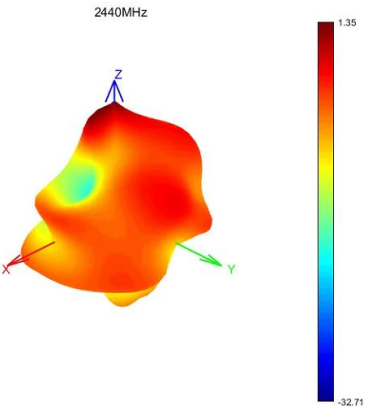
Antenna 2440MHz 2D-Phi Pattern



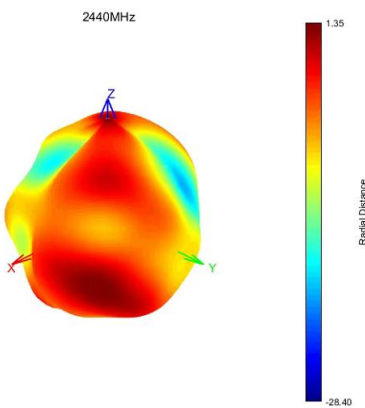
Antenna 2440MHz 2D-Phi Pattern



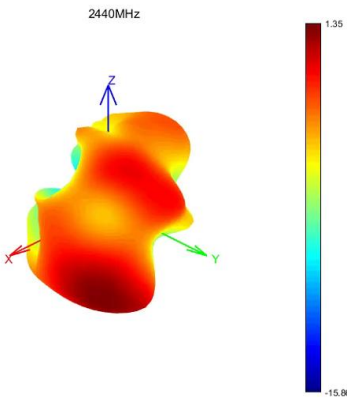
3D-Horizontal Pattern



2440MHz 3D-Vertical Pattern



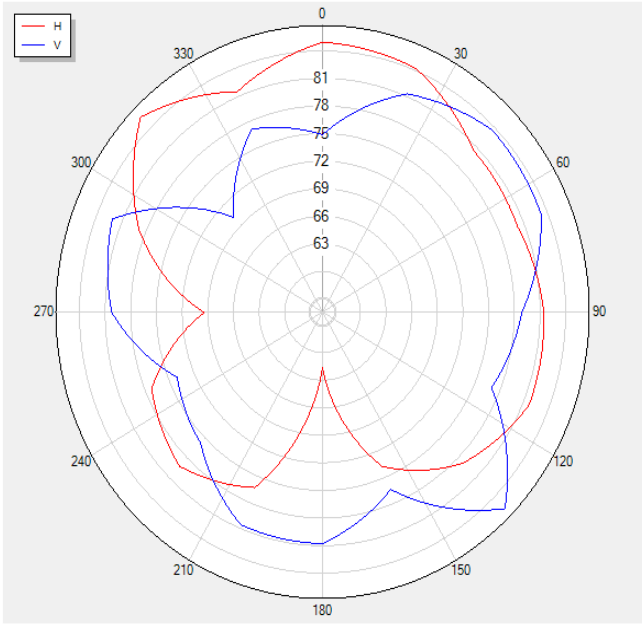
3D-Vertical Pattern



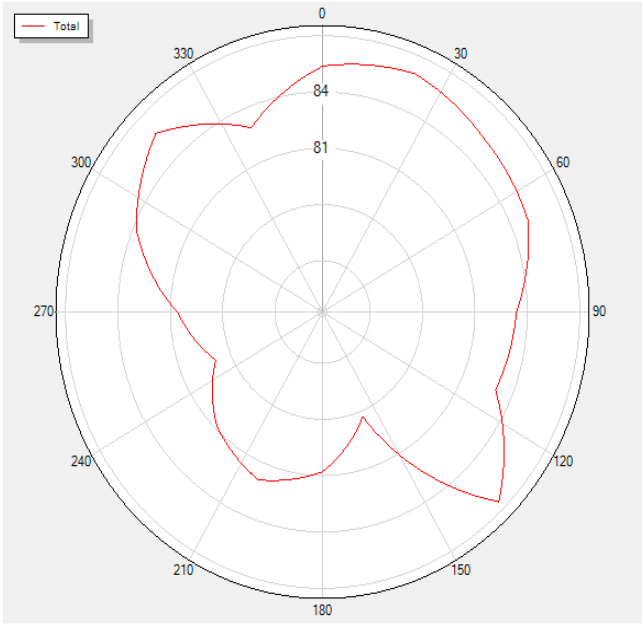
1#	channel	TRP(dBm)	TIS(dBm)
Bluetooth TRP/TIS	0	2.3	-76.76
	39	4.04	-83.46
	78	2.98	-84.58

2#	channel	TRP(dBm)	TIS(dBm)
Bluetooth TRP/TIS	0	2.31	-83.4
	39	2.44	-86.32
	78	0.17	-85.31

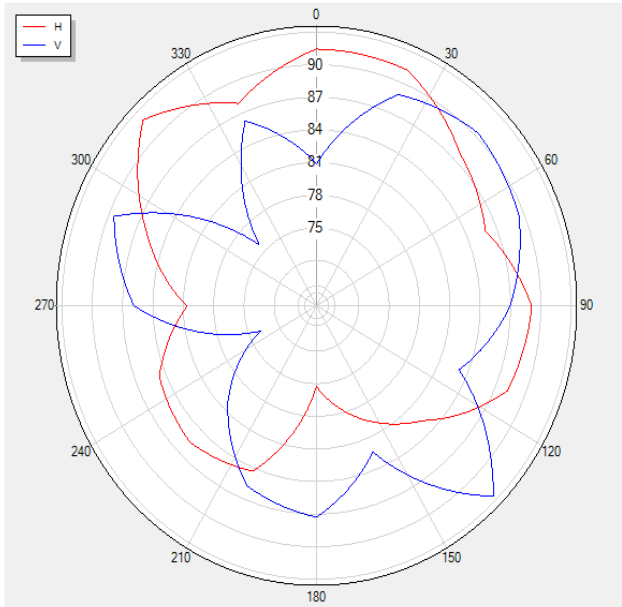
BLUETOOTH_Tis_Rssi_0 Polar



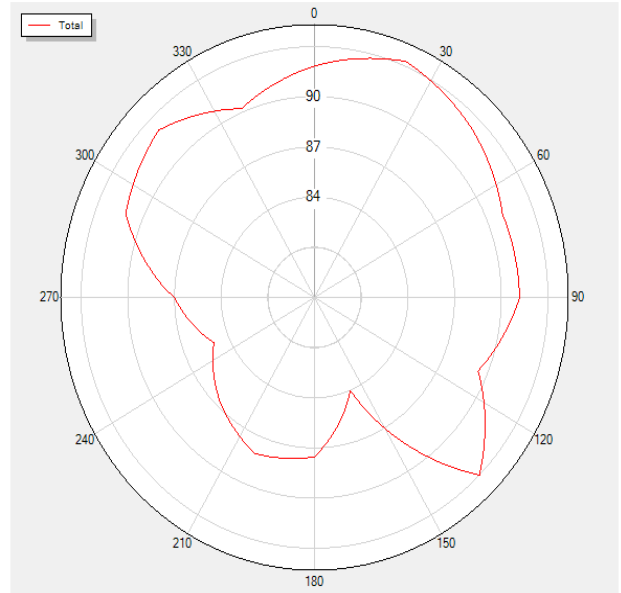
BLUETOOTH_Tis_Rssi_0 Total



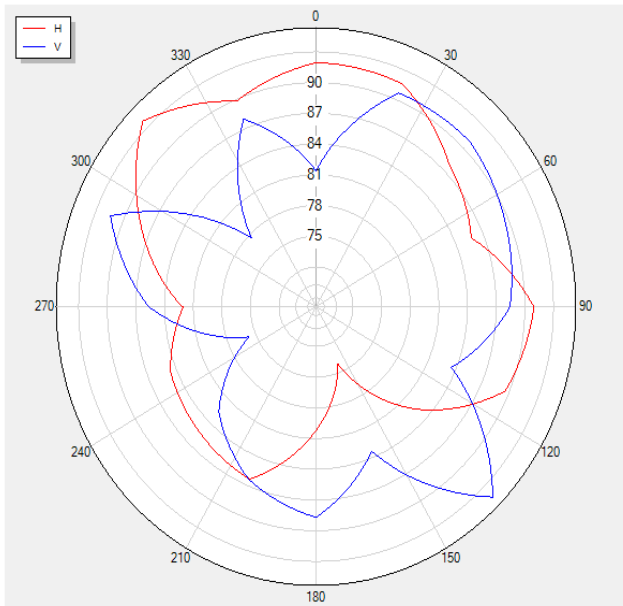
BLUETOOTH_Tis_Rssi_39 Polar



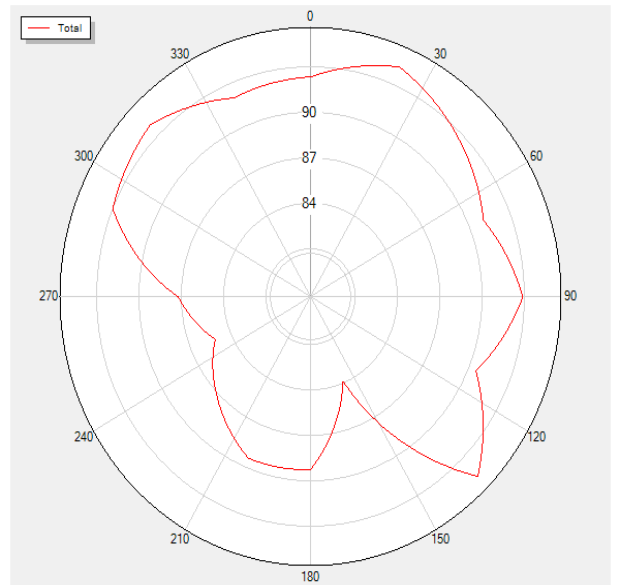
BLUETOOTH_Tis_Rssi_39 Total



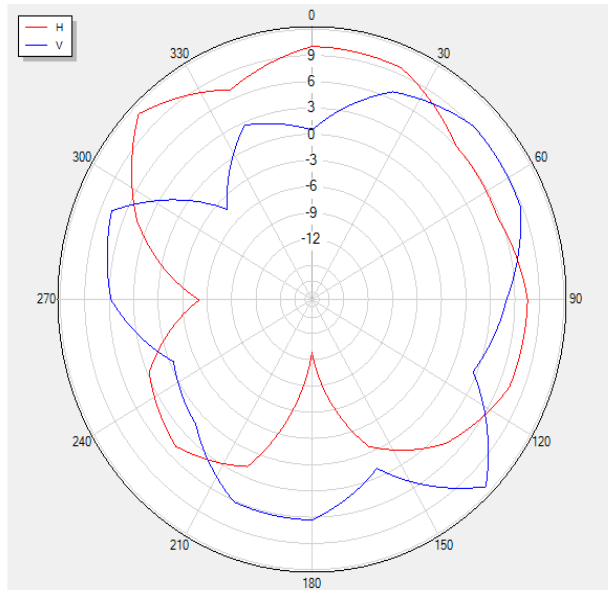
BLUETOOTH_Tis_Rssi_78 Polar



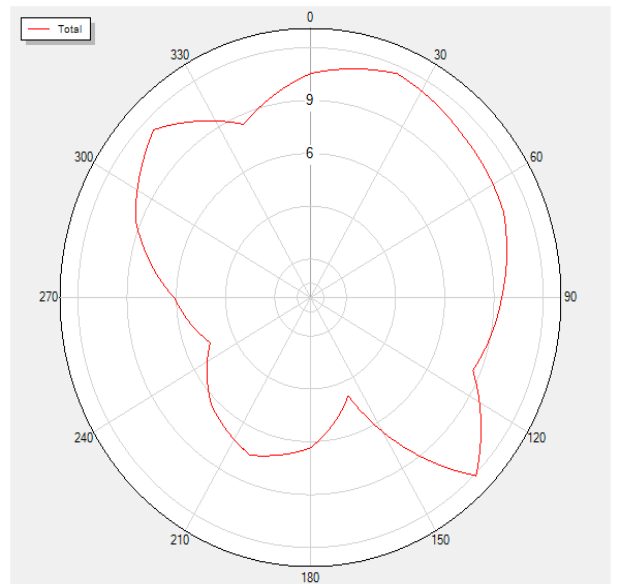
BLUETOOTH_Tis_Rssi_78 Total



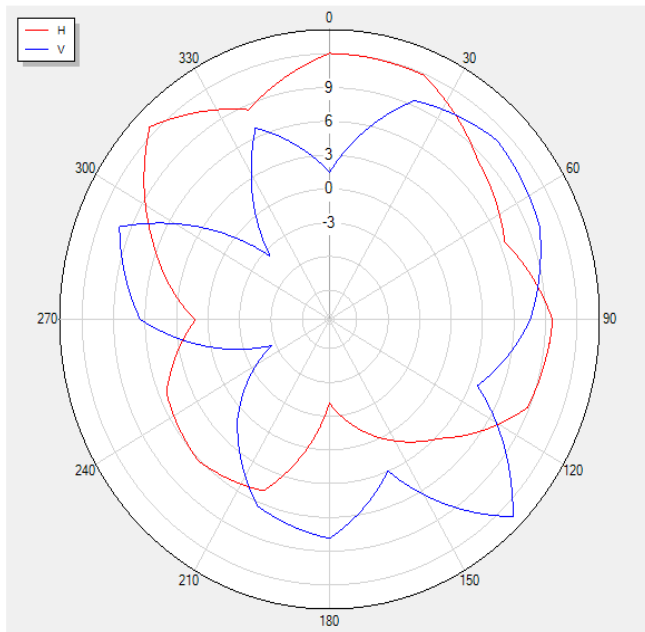
BLUETOOTH_Trp_0 Polar



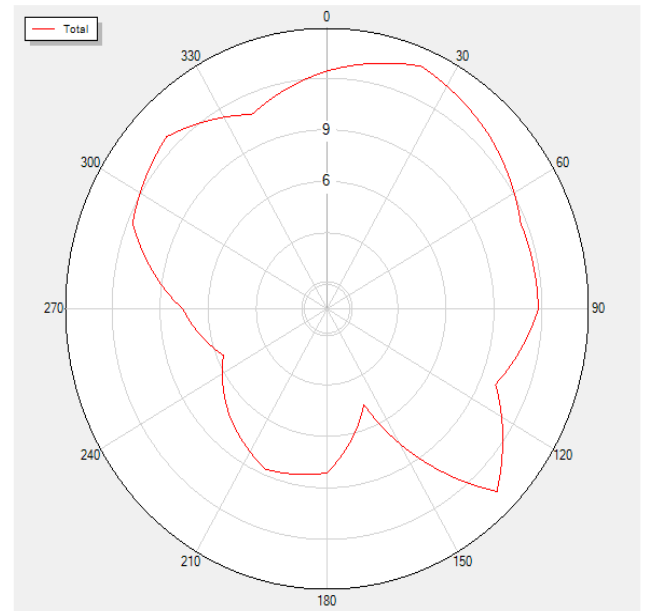
BLUETOOTH_Trp_0 Total



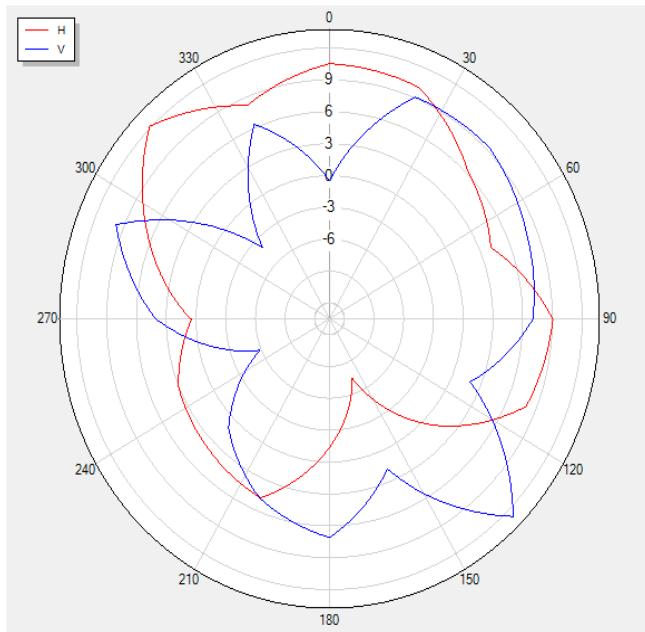
BLUETOOTH_Trp_39 Polar



BLUETOOTH_Trp_39 Total



BLUETOOTH_Trp_78 Polar



BLUETOOTH_Trp_78 Total

